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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,329	09/02/2003	Naoaki Tani	SAS2-PT058	2926

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EXAMINER	
SEVER, ANDREW T	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/653,329	TANI, NAOAKI	
	Examiner	Art Unit	
	Andrew T Sever	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/2004, 8/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 7-12, 18-20, 21, and 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki (US 2003/0193649) and further in view of Miller et al. (US 5,967,653.)

Seki teaches in figure 3 an illumination apparatus comprising:

An illuminant (LED 50), which radiates diffused light form an outgoing plane and generates heat (all illuminants generate heat inherently);

A light guiding member (51) configured to guide the diffused light from the illuminant (50) while reflecting the diffused light at the internal surface thereof, the light guiding member including: an incident end which is close to the outgoing plane of the illuminant, and into which the diffused light is incident and which is larger than the outgoing plane of the illuminant.

Seki does not teach that the outgoing plane of the light guiding member is larger the incident end, nor does Seki teach a holding member to integrally hold the illuminant and light guiding member at a predetermined interval (although Seki teaches them being spaced apart at an interval, Seki, fails to teach what holds them at that interval although a holder of some sort is inherent.)

Miller teaches in figure 6 a prior art illuminant (arc lamp with a reflector 23), which focuses light into a light guiding member 20, which has a outgoing plane that is larger then an incident plane. Miller further teaches a holding member configured to integrally hold the illuminant and further teaches that the holding member is designed to conduct and radiate excess heat as taught in column 4 lines 7-46. Miller teaches that the holder's heat dissipating abilities are advantageous in order not to damage the media to be projected such as film or LCD panels (see column 1 lines 5-8). Miller also teaches that as compared to cylindrical light guiding member as taught by Seki and as shown in figure 1 of Miller, the parabolic light guiding member is able to better collimate off axis rays as is taught in column 4 lines 26-46. (Although it is true that the LED light source of Seki has no where near the amount of off axis rays of the prior art lamp of Miller, it is well known in the art that LED sources are less bright and therefor the gain in efficiency of the parabolic light guiding member is still useful, see for example also US 6,318,863 to Tiao et al. figure 2a which also teaches using similarly shaped light guiding members for LED light sources.) Given all the advantages taught by Miller, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the holding member and parabolic shaped light guiding member with the illumination apparatus taught by Seki.

With regards to applicant's claims 7 and 27:

As clearly shown in Miller and Seki a space is provided to allow for airflow between the illuminant and the light guiding member.

With regards to applicant's claims 8, 9, 28, and 29:

Seki teaches in paragraphs 36 and 37 the well-known ways light guiding members are typically designed.

With regards to applicant's claim 10:

Seki teaches in figure 1 that illumination apparatus of the type taught above are used in display devices, specifically parts 50 and 51 comprise the illumination apparatus while part 52 comprises an illumination lens to condense the light from the outgoing end of the light guiding member of the illuminant apparatus. Seki teaches that the illumination lens focuses the light onto an image-forming core (53-55, 9, and 10), which includes an image display member. Although Seki's illumination lens does not specifically focus the light onto the light modulating member, rather focusing it first on a polarization splitting member (57), one with ordinary skill in the art at the time the invention was made would recognize that the combination of the polarizer up to the light modulating member constitutes the display member and therefore the image display member is disposed in the vicinity of the rear side focal point position of the illumination lens.

With regards to applicant's claim 11:

The outgoing end of the light guiding member is positioned at the front side focal point position of lens 52.

With regards to applicant's claim 12:

The light guiding member of Seki in view of Miller obviously makes a maximum angle of the light ray radiated from the outgoing end to be $\tan^{-1}$ (W/L) or more. (All angles would either be less then this and therefor not a maximum angle, equal to, or more.)

With regards to applicant's claims 18-20:

See claims 7-9 and 10 above.

With regards to applicant's claim 21:

See the with regards to applicant's claim 10 (although the light valve does not immediately follow the light guiding member it is in the vicinity)

With regards to applicant's claim 30:

See above.

With regards to applicant's claim 31:

See the with regards to applicant's claim 10

With regards to applicant's claim 32:

See the with regards to applicant's claim 21.

3. Claims 2-6, 13-17, and 22-26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Miller as applied to claims 1, 7-12, 18-20, 21, and 27-32 above, and further in view of Hoffman et al. (US 6,325,550.)

As described in more detail above Seki in view of Miller teach an illumination apparatus which comprises an illuminant, a light guiding member, and a holding member which holds the former two components at a predetermined interval. The light guiding member is designed such that it has an incident end, which is larger, the outgoing plane of the illuminant and the light guiding member has an outgoing plane that is larger than its incident end. The holding member includes a heat-conducting portion to conduct heat generated at the illuminant and radiates heat away.

With regards to applicant's claims 2 and 22:

Seki in view of Miller does not teach that the holding member holds the illuminant and the light guiding member so as to be relatively movable while maintaining the illuminant and the light guiding member at a predetermined interval. Hoffman teaches, also, a holding member for holding an illuminant and a light guiding member together. Hoffman's coupling, has the advantage as taught in column 2 specifically lines 54-59 that although heat causes the light guide (and other components) to expand, it is able to compensate and maintain a predetermined interval. Hoffman teaches in column 3 lines 34-62 that this accomplished through a mounting mechanism for the light guiding member that allows for the predetermined interval to be maintained while the light guiding member expands or contracts as it is heated or cooled. Given that this improves

the consistency of the light produced by the illumination apparatus (since the predetermined interval does not change), it would have been obvious to one of ordinary skill in the art at the time the invention was made to including the mounting mechanism taught by Hoffman in the illumination apparatus taught by Seki in view of Miller.

With regards to applicant's claims 3-6 and 23-26:

Seki in view of Miller teaches that the heat is removed from the light guiding member through the holding member, instead of elsewhere with the light guiding member being insulated from the heat. Hoffman teaches in column 2 lines 14-20 that the heat of the illuminant can damage light guiding members and accordingly Hoffman teaches that instead of removing the heat at the light guide member as taught by Miller, the heat is removed at a coupling (26 in figure 2, see column 4 lines 10-17 which teaches that the coupling conducts away the heat.) The coupling is then connected to the light guiding member via an insulating collar with a heat conductivity lower then that of the heat conducting portion as is claimed by applicant's claims 5 and 25 (172 in figure 4 as taught in column 4 lines 64-66 which is interposed between the illuminant and the light guiding member as is claimed in applicant's claims 6 and 26.) Given Hoffman's teaching that the material that makes up light guiding members is easily damaged by heat, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the illumination apparatus taught by Seki in view of Miller to include the coupling member which conducts away heat and insulates the light guiding member from the illuminant, in the holding member, as taught by Hoffman.

With regards to claim 13:

See above with regards to claims 2 and 10

With regards to claims 14-17

See above with regards to claims 3-6 and 10

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 7-12, 18-20, 21, and 27-32 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 14, and 30 of copending Application No. 10/653,004 (as presented in US 2004/0041984) in view of Miller et al.

The '004 application teaches the illumination apparatus as well as a display apparatus using it, wherein the illumination apparatus includes an illuminant and a light guiding member held together by a holding member. The light guiding portion having an outgoing end, which is

larger then the incident end. The '004 application additionally claims a display having all of the claimed display parts after the illumination apparatus.

The '004 application does not claim the holding member having a heat conducting portion to conduct heat generated at the illuminant, a heat radiating portion configured to radiate heat from the heat conducting portion, and the '004 application does not teach that the holding portion holds the illuminant and the light guiding member at a predetermined interval. As described above in the 35 USC 103 rejection based on Seki in view of Miller, Miller teaches all of these properties of the holding portion, for the purpose of not damaging the media to be projected on, accordingly it would be obvious to include them in the illuminant and display system claimed by the '004 application.

This is a provisional obviousness-type double patenting rejection.

6. Claims 2, 3-6, 13-17, and 22-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 14, and 30 of copending Application No. 10/653,004 (as presented in US 2004/0041984) in view of Miller as applied to claims 1, 7-12, 18-20, 21, and 27-32 above and further in view of Hoffman et al. (US 6,325,550)

The '004 application teaches the illumination apparatus as well as a display apparatus using it, wherein the illumination apparatus includes an illuminant and a light guiding member held together by a holding member. The light guiding portion having an outgoing end, which is larger, then the incident end. The '004 application additionally claims a display having all of the claimed display parts after the illumination apparatus.

The '004 application in view of Miller as explained above further teach that the holding member holds the illuminant and the light guiding member at a predetermined interval and that the holding member includes a heat conducting portion configured to conduct the heat generated at the illuminant and further a heat radiation portion configured to radiate heat from the heat conducting portion.

The '004 application in view of Miller does not teach either that the holding member holds the illuminant and the light guiding member so as to be relatively movable while maintaining the illuminant and the light guiding member at a predetermined interval or that the that an insulation member is provided between the heat radiating portion and the light guiding member. As described above in the 35 USC 103 rejection based on Seki in view of Miller and further in view of Hoffman, Hoffman provides both of these teachings.

This is a provisional obviousness-type double patenting rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2003/0218880 to Brukilacchio teaches in figure 1 a LED (111) with a heat sink (190) and a light guiding member (160).

US 6,517,211 to Mihara teaches in figure 1 a light source (206G), a heat sink (205G...although 205G is actually a diffuser which has a heat sink attached to its back), a light guide (204G) a light valve (201G).

US 6,547,400 to Yokoyama teaches in figure 1 a plurality of LED's, a light guide (10), and a space between them. Further in figure 4 they are shown configured as a projector with the light valve in the vicinity of outgoing plane of the light guiding member.

US 6,412,953 to Tiao et al. teaches in figure 8A and 8b various configurations of LEDs, light guiding members and display apparatuses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS

David Gray
Primary Examiner